Spherical Sensorlenses for Angular Momentum-Specific Measurement of IR Signals in Support of Wireless Communication

20 October 2024
Simon Edwards
Research Acceleration Initiative

Introduction

A shortcoming of extant wireless telecommunications technology is the inability for signals of the same frequency to be discriminated from one another when emanating from multiple sources. Each individual signal must be carried at a different frequency in order for a receiver (generally part of a cellular tower) to differentiate between two signals. While this is not the only method used to differentiate between signals, it is the primary method.

Abstract

Building upon the sensorlens concept of 26 November 2023, I propose that a spherical sensorlens be constructed of the aforementioned (ibid.) translucent CMOS system sandwich layers. While the frequency-distorting aspect of the technology is, in photographic applications, meant to allow for photon/wave strike position to be localized with greater accuracy, when not high-resolution but rather high-bandwidth and noise-reduction is the desired application, the same mechanism could be used to ascertain the angular momentum of a large number of individual signals being broadcast at the same frequency.

The frequency-altering prism would uniquely modify frequency upon arrival and the manner in which the frequency is altered would inform the system of the strike-angle of the signal. Many signals all carried at the precisely same frequency could be logically differentiated by tracking the “source direction” of a signal once a communications link has been established. In this regime, only when two sources of the same frequency are in perfect alignment would data be lost.

Rather than the familiar long rectangular transmitters/receivers seen today on cellular towers, these new transmitters/receivers would be spherical and optically transparent. Individual orbs would be optically shielded from one another to prevent interference between transmitters and receivers in close proximity and signals would be transmitted with the greatest possible beam collimation in the known direction of the signal source with the aid of helicization.

Conclusion

It is critical that helical light in the infrared spectrum not be utilized for general telecommunications purposes as it would result in permanent retinal damage to anyone within several miles of such a transmitter. Such a system should employ sub-IR light. The ability to convey comparable quantities of data using a single frequency rather than using increasingly large portions of the electromagnetic spectrum should have the effect of reducing the level of exposure to harmful EM experienced by the the public at large. Helical light

at a safe frequency; given its ability to avoid resonance with matter; may prove to be medically safer than traditional EM of the same frequency. Reduced power requirements for individual cellular telephones should allow for greater battery life.